

PATENT CLAIMS

- 5 ① Industrial robot (1) comprising a first robot part (3) and a second robot part (5) movably arranged relative each other and a balancing arrangement (8) operating between them, where the balancing arrangement (8) comprises a first attachment (12) and a second attachment (14) for an articulate fastening to the corresponding robot part (3, 6) and where the balancing arrangement (8) is arranged to counteract the attraction of gravity when the robot parts (3, 6) are pivoted, characterized in that the balancing arrangement (8) comprises a telescopic unit (9) connected to the respective attachment (12,14) and a helical spring unit (10) arranged between a first spring seat (15) and a second spring seat (16) fixed on the telescopic unit (9).
- 10 2. Industrial robot according to claim 1, characterized in that the telescopic unit (9) is arranged coaxially with the helical spring unit (10).
- 15 3. Industrial robot according to claims 1-2, characterized in that the telescopic unit (9) comprises a pull rod (23) and a guide tube (26).
- 20 4. Industrial robot according to claim 3, characterized in that the guide tube (26) comprises the first spring seat (15).
5. Industrial robot according to claim 3, characterized in that the pull rod (23) comprises the second spring seat (16).
- 25 6. Industrial robot according to claims 1-4, characterized in that the first spring seat (15) comprises a spring housing (15a).
7. Industrial robot according to claim 6, characterized in that the guide tube (26) is fastened coaxially in the spring housing (15a) surrounding the helical spring unit (10).

8. Industrial robot according to claim 6, characterized in that the pull rod (23) is displaceably arranged on the exterior of the guide tube (26) and extends with a first end (23a) out through an opening (20) in the spring housing (15a).
- 5 9. Industrial robot according to claim 3, characterized in that the pull rod (23) is designed with a freely rotatable attachment (12) in its second end (23b).
10. Industrial robot according to claim 8, characterized in that an exchangeable guide ring (34) is rigidly arranged in the opening (20) of the spring housing (15a).
- 10 11. Method of balancing an industrial robot (1) comprising a first robot-part (3) and a second robot part (6) movably arranged relative each other and a balancing arrangement (8) operating between them, where the balancing arrangement (8) comprises a first attachment (12) and a second attachment (14) for an articulate fastening to the
15 corresponding robot part (3, 6) and where the balancing arrangement is arranged to counteract the attraction of gravity when the robot parts (3, 6) are pivoted, characterized in that the balancing arrangement (8) is made to include a telescopic unit (9) connecting to the respective attachment (12, 14) and that a helical spring unit (10) is arranged between a first spring seat (15) fixed on the telescopic unit
20 and a second spring seat (16).
12. Method for an industrial robot according to claim 11, characterized in that the telescopic unit (9) guides the helical spring unit (10).
- 25 13. Method for an industrial robot according to one of the claims 11-12 characterized in that the helical spring unit (10) is arranged coaxially on the telescopic unit (9).
- 30 14. Method according to claim 1 characterized in that the second attachment (14) is applied in the form of a freely rotatable ring fastener (24).

15. Use of a robot according to claim 1 and a method according to claim 11 arranged with a vertically articulated robot arm.